Environmental Protection Operations Directorate
Prairie & Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife, NT X1A 2P7

ECCC File: 6100 000 011/004
NWB File: 2AM-MRY1325

October 23, 2024

via email at: licensing@nwb-oen.ca

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Richard Dwyer:

RE: 2AM-MRY1325 – Baffinland Iron Mines Corporation – Mary River Project – Type A Water Licence Renewal Application

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned renewal application. You will find our Technical Comments Submission attached.

ECCC provides expert information and knowledge to project assessments on subjects within the department's mandate, including climate change, air quality, water quality, biodiversity, environmental preparedness and emergencies. This work includes reviewing proponent characterization of environmental effects and proposed mitigation measures. We provide advice decision-makers regarding a proponent's characterization of environmental effects, the efficacy of their proposed mitigation activities, and may suggest additional mitigation measures. Any comments received from ECCC in this context does not relieve the proponent of its obligations to respect all applicable federal legislation.

If you need more information, please contact Melissa Pinto at (867) 445-5384 or Melissa.Pinto@ec.gc.ca.

Sincerely,

Jody Small
Regional Director, EPOD-PNR

Attachment: ECCC's Technical Comments Submission Re: Mary River Type A Water Licence Renewal

cc: Eva Walker, Head, Environmental Assessment North (NT and NU)

Environment and Climate Change Canada
Environnement et Changement climatique Canada

ENVIRONMENT AND CLIMATE CHANGE CANADA'S TECHNICAL COMMENTS TO THE NUNAVUT WATER BOARD

RESPECTING THE TYPE A WATER LICENCE RENEWAL APPLICATION FOR THE MARY RIVER PROJECT PROPOSED BY BAFFINLAND IRON MINES CORPORATION

OCTOBER 23, 2024

Canada

Executive Summary

Baffinland Iron Mines Corporation (Proponent) is renewing their Type A water licence for the Mary River Project. The Project is an operating iron mine located on Baffin Island in the Qikiqtani region of Nunavut. The Proponent is proposing to continue operations with no changes to the licence.

Environment and Climate Change Canada (ECCC) provides specialist expert information or knowledge to the Nunavut Water Board (NWB) in accordance with the expertise that ECCC has available as required under Article 13 of the Nunavut Agreement. This work includes reviewing proponent characterization of environmental effects and mitigation measures, and providing advice to decision makers on activities needed to mitigate these environmental effects.

ECCC has participated in all phases of the Water Licence process for the Project thus far: ECCC reviewed the renewal application and provided Information Requests to the NWB on July 24, 2024; and ECCC is continuing its participation through the submission of technical comments to the NWB for consideration. The technical comments are based on ECCC's mandate in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act*. The technical comments identify concerns and recommendations with respect to erosion and sedimentation control, incorporating water-related management plans and other mine infrastructure into the licence, and effluent quality criteria for aromatic hydrocarbons and polishing waste stabilizing ponds. Any comments received from ECCC in this context does not relieve the Proponent of its obligations to respect all applicable federal legislation.

List of Acronyms

BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CCME	Canadian Council of Ministers of the Environment
CEPA	*Canadian Environmental Protection Act*
ECCC	Environment and Climate Change Canada
FEQG	Federal Environmental Quality Guideline
IR	Information Request
MBCA	*Migratory Birds Convention Act*
MDMER	*Metal and Diamond Mining Effluent Regulations*
MMER	*Metal Mining Effluent Regulations*
NWB	Nunavut Water Board
PWSP	Polishing Waste Stabilizing Pond
QIA	Qikiqtani Inuit Association
SARA	*Species at Risk Act*
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

Table of Contents

1.0 Introduction

Baffinland Iron Mines Corporation (Proponent) is renewing the Type A Water Licence for their Mary River Project, an iron ore mine located on Baffin Island in the Qikiqtani region of Nunavut. The mine received its operating water licence in 2013, with an amendment in 2015 for the Early Revenue Phase. The current licence is set to expire on June 10, 2025.

The Proponent submitted a Type A water licence renewal application to the Nunavut Water Board (NWB) for the Project on June 26, 2024. Environment and Climate Change Canada (ECCC) reviewed the application and provided information requests (IRs) to NWB on July 24, 2024. By way of this submission, ECCC is providing technical review comments to the NWB for their consideration. The comments and recommendations provided are based on ECCC's mandate in the context of the *Canadian Environmental Protection Act* (CEPA) and the pollution prevention provisions of the *Fisheries Act*.

ECCC provides specialist expert information or knowledge to the NWB in accordance with the expertise that ECCC has available as required under Article 13 of the Nunavut Agreement. ECCC has participated in all phases of the review process for the Project thus far and is continuing its participation through the submission of these technical comments to the NWB for consideration.

A summary of ECCC's mandate and legislation is provided in Section 2.0. ECCC's response to Qikiqtani Inuit Association (QIA)'s IR is provided in Section 3.0, ECCC's technical review comments and recommendations are provided in Section 4.0, and Acknowledgments are provided in Section 5.0

ECCC's comments and recommendations are provided with respect to erosion and sedimentation control, incorporation of water-related management plans into the licence, effluent quality criteria for aromatic hydrocarbons and polishing waste stabilizing ponds, and updating the licence to include KM105 Stormwater Pond.

2.0 Environment and Climate Change Canada's Mandate, Roles, and Responsibilities

The mandate of ECCC is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change. ECCC's mandate covers matters such as the preservation and enhancement of the quality of the natural environment (including water, air and soil quality, and the coordination of the relevant policies and programs of the Government of Canada), renewable resources (including migratory birds and other non-domestic flora and fauna), meteorology, and the enforcement of rules and regulations. ECCC's specialist advice is provided in the context of the CEPA, the pollution prevention provisions of the *Fisheries Act*, *Species at Risk Act* (SARA), and the *Migratory Birds Convention Act* (MBCA).

ECCC administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of a deleterious substance into fish-bearing waters. ECCC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to CEPA.

ECCC is responsible for protecting and conserving migratory bird populations and individuals under the MBCA. ECCC also administers SARA in cooperation with Fisheries and Oceans Canada, and the Parks Canada Agency to prevent wildlife species from becoming extirpated or extinct, provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming threatened, endangered or extirpated.

Additional information on ECCC's mandate can be found at: https://www.canada.ca/en/environment-climate-change/corporate/mandate.html.

3.0 Environment and Climate Change Canada's Response to Qikiqtani Inuit Association's Information Request #9

On September 24, 2024, the NWB requested ECCC provide clarification on QIA's IR#9, which requested that Baffinland discuss why contact water discharges from Milne Port are not subject to the *Metal and Diamond Mining Effluent Regulations* (MDMER), in this technical comments submission. The Proponent provided responses to IRs, including QIA IR#9, on August 15, 2024. After reviewing the Proponent's responses, QIA submitted a follow-up to their completeness check of the water licence renewal application on September 3rd. QIA indicated their IR was partially resolved as the Proponent did not clarify why the discharge of contact water from Milne Port is not subject to the MDMER. The Proponent provided further information on September 10th, including additional clarification on IR#9. On September 18th, QIA deferred their concern to technical review and sought clarification from ECCC:

"*QIA would like to request Environment and Climate Change Canada's judgement on whether discharges to the marine environment from the Milne Port management ponds of surface water that has come into contact with the processed ore are subject to the Metal and Diamond Mine Effluent Regulations*."

ECCC's response to QIA IR#9 is below.

ECCC would like to refer QIA back to a letter sent on December 15, 2014 from ECCC to the NWB regarding the application of the *Metal Mining Effluent Regulations* (MMER), now MDMER, to ore stockpiles at Milne Port. In this letter, ECCC states that effluent coming from stockpiled ore on the Mine Site is subject to MMER, however Milne Port is not part of the Mine Site and therefore MMER do not apply to discharges from the ore stockpiles at the port. Discharges at Milne Port are subject to the general prohibition against the deposition of deleterious substances into water frequented by fish under the *Fisheries Act*.

To elaborate, the pollution prevention provisions of the *Fisheries Act* subsection 36(3) prohibit the deposit of deleterious substances into fish frequented waters unless authorized by regulation. These regulations, such as MDMER, are created pursuant to the authority in subsection 36(5) and for the purposes of 36(4)(b) of the *Fisheries Act* to authorize the deposit of certain deleterious substance(s) into water frequented by fish, however specific conditions (concentrations, limits, and parameters) apply so that regulatees are exempted and protected from the more stringent prohibition of subsection 36(3) under the *Fisheries Act*. As MDMER does not apply to discharges from Milne Port, the Proponent is not authorized to deposit any deleterious substance(s) into water frequented by fish at this site.

ECCC refers to the Proponent's response to QIA IR#9 (dated September 9, 2024) for rationale as to why Milne Port is not considered part of the Mary River Mine Site under the MDMER definition of a metal mine. Since Milne Port is not used to produce iron ore and is not adjacent to the Mary River Mine Site, the MDMER do not apply to Milne Port. The Proponent also mentions that "*MDMER has not applied to Milne Port since ore began moving through the area for commercial purposes in 2014…Similarly, MDMER do not apply to areas of other ports in Canada where mined materials are stockpiled and shipped overseas (for example the Port of Vancouver).*"

4.0 Environment and Climate Change Canada's Technical Review Comments

This section summarizes the results of ECCC's technical review. ECCC has reviewed the information provided in the Mary River Type A Water Licence Renewal Application and is providing comments and recommendations in areas related to its mandate.

As mentioned in the previous section, ECCC notes subsection 36(3) of the federal *Fisheries Act*, administered by ECCC prohibits the discharge of deleterious substances to waters frequented by fish, or to a place where those substances might enter such waters.

4.1 ECCC#1 – Erosion and Sedimentation Control Measures at the Mine Site

References

1. 2023 QIA-NWB Annual Report (Baffinland; March 31, 2024)
    - Section 7.3.9: Snow Stockpile Monitoring
    - Section 7.3.10: Freshet Monitoring
    - Section 7.4: Surface Water Runoff Downstream of Project Areas and Quarries
2. 2022 QIA-NWB Annual Report (Baffinland; March 31, 2023)
    - Section 6.1: Spills
    - Section 7.3.4: Mine Site Crusher Facility
    - Section 7.3.5: KM 106 Run-of-Mine (ROM) Ore Stockpile Facility
    - Section 7.3.6: Mine Site KM 105 Surface Water Management Pond
3. Mine Site Water Management Plan (Knight Piésold Ltd.; June 30, 2021)
    - Section 1.4: Plan Limits and Objectives
    - Section 4.3: Conceptual Water Management Measures
    - Table 4.1: Proposed Water Management Measures - Mary River Catchment
    - Section 5.3: Conceptual Water Management Measures
    - Table 5.1: Proposed Water Management Measures - Sheardown Lake Catchment
    - Section 6.3: Conceptual Water Management Measures
    - Table 6.1: Proposed Water Management Measures - Camp Lake Catchment

Proponent's Conclusion

Controlling erosion and sedimentation at the Mine Site during freshet continues to be challenging. Releases and seepage of sediment-laden water are reported in the 2023 and 2022 annual reports, despite efforts made to prevent erosion and sedimentation. The Mine Site Water Management Plan was created in 2021 to address these issues and proposed a medium-term plan for controlling sedimentation on the Mine Site. The Plan objectives were to address sedimentation for the Mine Site component of the project for the 2021 to 2025 period.

ECCC's Conclusion

A renewed licence would include the period after the proposed Plan's execution window, and erosion and sedimentation control continue to be an important issue on site. Therefore, an update on the Plan's execution, lessons learned, which measures have proven to be effective or not, how the Proponent has adapted, and proposed measures for the future should be provided. Specifically, updates should be provided on:

- condition of the KM 105 pond and the water tightness of the dam constructed in 2021 to 2022;
- advancement of SDLT-1 Sedimentation Pond;
- advancement of QMR2 Sedimentation Pond;
- advancement of Weatherhaven Camp Sedimentation Pond; and
- proposed remedial measures for the Mary River, Sheardown Lake, and Camp Lake Catchments.

ECCC Recommendation(s):

ECCC recommends the Proponent:

a) provide an update on the execution of the Mine Site Water Management Plan, including updates on the five points requested above; and

b) provide an updated Plan to address continued challenges controlling erosion and sedimentation on the Mine Site that integrates lessons learned including which measures have proven to be effective or not and how the Proponent has adapted.

4.2 ECCC#2 – Incorporation of Management Plans Related to Water into the Water Licence

References

1. Re: 2AM-MRY1325 Type A Water Licence Renewal Application Information Request Responses (Baffinland; August 15, 2024)
    - Responses to ECCC-1 and -2
2. Surface Water and Aquatic Ecosystem Management Plan (Baffinland; March 31, 2021)
    - Section 6.4.1: Freshet Mitigation
    - Section 6.4.2: Fish Protection
    - Section 9.3: Snow Management Monitoring
    - Section 9.4.2.3: Tote Road Monitoring Program (TRMP)
    - Table 10-1: Reporting Summary for Monitoring Programs
3. Snow Management Plan (Baffinland; March 31, 2024)
    - Section 5.3: Water Quality Reporting
4. Appendix D of Roads Management Plan: Tote Road Monitoring Program (Baffinland; March 31, 2019)
    - Section 8: Data Reporting Requirements and Interpretation

Proponent's Conclusion

Several plans specifying how water is managed on site do not currently form part of the licence. Though these plans were created through Nunavut Impact Review Board processes, they are relevant to the water licence. In response to IRs on this topic, the Proponent states "…*plan is not included in the Water Licence and therefore was not included in this renewal.*"

ECCC's Conclusion

The water licence renewal is a good opportunity to review all plans related to water management using a whole of site perspective and incorporate all relevant management plans into the licence. Specifically, the Snow Management Plan and Tote Road Monitoring Program should be incorporated into the water licence, since both plans:

- address how water is managed and monitored;
- include Action Response Plans or Frameworks;
- require reporting in the QIA & NWB Annual Report for Operations;
- and are referred to extensively in the Surface Water and Aquatic Ecosystem Management Plan.

ECCC Recommendation(s):

ECCC recommends incorporating the Snow Management Plan and the Tote Road Monitoring Program into a renewed water licence. These could be as stand-alone plans or annexes to existing plans.

4.3 ECCC#3 – Criteria for Project-Related Total Suspended Solid Impacts Along Tote Road

References

1. Re: 2AM-MRY1325 Type A Water Licence Renewal Application Information Request Responses (Baffinland; August 15, 2024)
    - Response to ECCC-3
2. Appendix D of Roads Management Plan: Tote Road Monitoring Program (Baffinland; March 31, 2019)
    - Section 6: TSS Water Quality Criteria and Response-Action Framework
3. Canadian Water Quality Guidelines for the Protection of Aquatic Life, Total Particulate Matter (Canadian Council of Ministers of the Environment; 2002)

Proponent's Conclusion

A project-related change to total suspended solids (TSS) in watercourses along the Tote Road is defined in Section 6 of the Tote Road Monitoring Program as: "*When upstream concentrations are less than 250 mg/L, a potential Project related change is defined as a greater than 50 mg/L increase in the downstream concentration. Where concentrations are greater than 250 mg/L in the upstream sample, a potential Project related change is defined as a greater than 20% increase in the downstream sample.*"

This is double the Canadian Council of Ministers of the Environment (CCME) guideline for protection of aquatic life. The suspended sediments CCME guidelines for protection of aquatic life during high flow are: "*Maximum increase of 25 mg/L from background levels at any time when background levels are*

between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is >250 mg/L." During periods of clear flow, the guidelines are more stringent: "*Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).*"

The Proponent provided a justification for this discrepancy in their responses to IRs: "*TSS concentrations during natural high turbidity events (e.g., freshet, or significant storm events) can result in TSS concentrations at upstream areas that are well above 250 mg/L, and therefore these creek/river systems naturally show, and are accustomed to, high TSS concentrations such that a <50 mg/L increase in TSS at other times of the year (when TSS is naturally lower than 250 mg/L) is unlikely to negatively affect biota of these creek/river systems.*"

ECCC's Conclusion

ECCC acknowledges that there are natural high turbidity events in the streams and rivers along the Tote Road. However, as stated in the CCME guideline: "*the two-pronged approach to guideline setting for suspended sediments recognizes that exposure duration plays a key role in the toxicity response*". The criteria set by the Proponent do not account for this and use twice the recommended CCME guidelines for all flow periods. This is not sufficiently protective of the aquatic environment. Excessive TSS levels should be avoided as they negatively impact fish both directly and indirectly.

ECCC Recommendation(s):

ECCC recommends considering the CCME guidelines, including the two-pronged approach, to develop updated criteria for TSS measured in watercourses along the Tote Road in order to reduce potential effects to the aquatic environment.

4.4 ECCC#4 – Metals Sampled for Tote Road Monitoring Program

References

1. Appendix D of Roads Management Plan: Tote Road Monitoring Program (Baffinland; March 31, 2019)
    - Table D-2: Tote Road Monitoring Program - Analytical Parameters

Proponent's Conclusion

Table D-2 of the Tote Road Monitoring Program defines analytical parameters for parameter groups 2, 3 and 4. Group 4 includes "*Total and Dissolved Metals*".

ECCC's Conclusion

The Program does not specify which metals should be analyzed.

ECCC Recommendation(s):

ECCC recommends the Proponent update the Tote Road Monitoring Program to specify which total and dissolved metals will be analyzed for collected water samples.

4.5 ECCC#5 – Aromatic Hydrocarbon Referencing

References

1. Fresh Water Supply, Sewage, and Wastewater Management Plan (Baffinland; April 20, 2024)
    - Section 3.1: Abbreviations
    - Section 6.3.1: System Overview

Proponent's Conclusion

The abbreviation "BTE" is defined as representing "4,4',4''-(Benzene-1,3,5-triyltri-2,1-ethynediyl) tribenzoic acid" in Section 3.1. This definition is not used consistently since Section 6.3.1 includes the statement "*compounds such as Benzene, Toluene, Ethylbenzene and Xylene (BTE)".*

ECCC's Conclusion

The inconsistent use of acronyms is confusing. No reference to 4,4',4''-(Benzene-1,3,5-triyltri-2,1-ethynediyl) tribenzoic acid was found in the Plan other than in the abbreviation section, so it is not clear if this compound is of concern or is monitored. Benzene, toluene, ethylbenzene and xylenes are aromatic hydrocarbons often grouped together and referred to as 'BTEX', so it is not clear why a new acronym was created in this Plan.

ECCC Recommendation(s):

ECCC recommends the Proponent update the Fresh Water Supply, Sewage, and Wastewater Management Plan to clarify where 4,4',4''-(Benzene-1,3,5-triyltri-2,1-ethynediyl) tribenzoic acid is referenced and to use the common BTEX acronym for benzene, toluene, ethylbenzene and xylenes.

4.6 ECCC#6 – Effluent Quality Criteria for Aromatic Hydrocarbons

References

1. Licence No. 2AM-MRY132 – Amendment No. 1 (Nunavut Water Board; July 21, 2015)
    - Table 6: Effluent Quality Discharge Limits for Oily Water Treatment Facilities
    - Table 8: Effluent Quality Discharge Limits for the Bulk Fuel Storage Facilities
    - Table 9: Effluent Quality Discharge Limits for the Landfarm Facilities
2. Fresh Water Supply, Sewage, and Wastewater Management Plan (Baffinland; April 20, 2024)
    - Table 8: Effluent Quality Discharge Limits for Oily Water Treatment Facilities
    - Table 9: Effluent Quality Discharge Limits for Bulk Fuel Storage Facilities
    - Table 10: Effluent Quality Discharge Limits for Landfarm Facilities
3. Federal Environmental Quality Guidelines - Benzene, Toluene, Ethylbenzene, Xylene (BTEX) (Environment and Climate Change Canada; July 2024)

Proponent's Conclusion

The water licence includes discharge criteria for benzene, ethylbenzene and toluene for effluent from the Oily Water Treatment, Bulk Fuel Storage and Landfarm Facilities. The criteria mirror the 1999 CCME long term freshwater concentration guidelines for the protection of aquatic life.

ECCC's Conclusion

ECCC notes new Federal Environmental Quality Guidelines (FEQGs) have since been developed, incorporating the latest understanding on the toxicity of benzene, ethylbenzene and toluene. In addition, a guideline has been created for xylenes. The new FEQGs for BTEX are:

Parameter	Federal water quality long-term guidelines (mg/L)
Benzene	0.59
Toluene	0.03
Ethylbenzene	0.07
Xylene	0.07

ECCC Recommendation(s):

ECCC recommends that the Proponent considers the more recent FEQGs in developing their discharge criteria for benzene, ethylbenzene, toluene and xylene for the Project.

4.7 ECCC#7 – Effluent Quality Criteria for Locations MS-MRY-04B and-04C

References

1. Licence No. 2AM-MRY132 – Amendment No. 1 (Nunavut Water Board; July 21, 2015)
    - Table 4: Effluent Quality Discharge Limits for Sewage Treatment Facilities to Freshwater Receiving Environment
    - Table 14: Monitoring Program: Mary River Mine Site
2. Fresh Water Supply, Sewage, and Wastewater Management Plan (Baffinland; April 20, 2024)
    - Table 5: Effluent Quality Discharge Limits for Sewage Treatment Facilities to Freshwater and to the Ocean
    - Table 7: Sewage Treatment Facility Monitoring Locations
    - Appendix G: PWSP Effluent Discharge Plan

Proponent's Conclusion

There are three polishing waste stabilizing ponds (PWSPs) at the Mine Site. The water licence identifies MS-MRY-04a as "*Exploration Camp Polishing Waste Stabilization Ponds (PWSP)*". The Fresh Water Supply, Sewage, and Wastewater Management Plan identifies three PWSPs as MS-MRY-04A, MS-MRY-04B and MS-MRY-04C.

The current licence explicitly refers to its Effluent Quality Discharge Limits for Sewage Treatment Facilities to Freshwater Receiving Environment applying to MS-MRY-04A but not -04B or -04C. The Fresh Water Supply, Sewage, and Wastewater Management Plan uses the same limits for all PSWPs in Appendix G, but does not specify limits for phosphorous for MS-MRY-04B or -04C in Table 5.

ECCC's Conclusion

Due to the discrepancy between the information regarding the PWSPs and associated effluent quality criteria included in the water licence and the Plan; it is not clear whether the limits are the same for all three PWSPs.

ECCC Recommendation(s):

ECCC recommends that both the water licence and the Fresh Water Supply, Sewage, and Wastewater Management Plan be updated to explicitly specify discharge criteria for all PWSPs on site, including MS-MRY-04B and MS-MRY-04C.

4.8 ECCC#8 – Integrating KM105 Pond into Plans and Water Licence

References

1. Fresh Water Supply, Sewage, and Wastewater Management Plan (Baffinland; April 20, 2024)
    - Table 14: Location of Water Management Facilities
    - Appendix C: Site Layout – Milne Port and Mine Site
    - Appendix A of Appendix I: Site Layout and Water Licence/MDMER Monitoring Locations
2. Surface Water and Aquatic Ecosystem Management Plan (Baffinland; March 31, 2021)
    - Section 9.4.1.2: Metal & Diamond Mining Effluent Regulations
    - Figure 2 of Appendix C: Mine Site Drainage and Water Licence Monitoring Locations
3. Appendix D of Roads Management Plan: Tote Road Monitoring Program (Baffinland; March 31, 2019)
    - Table D-2: Tote Road Monitoring Program - Analytical Parameters

Proponent's Conclusion

The Fresh Water Supply, Sewage, and Wastewater Management Plan has been updated to include KM105 Stormwater Pond in the tables and maps. However, references to this water management structure were not found in the Surface Water and Aquatic Ecosystem Management Plan.

ECCC's Conclusion

Since the KM105 Pond was built after the current licence was issued, it is not included as a monitoring location in the water licence. This renewal is a good opportunity to update the licence and plans to reflect water management infrastructure on site.

ECCC Recommendation(s):

ECCC recommends that a renewed licence include the KM105 Pond as a monitoring location and that the Proponent update the Surface Water and Aquatic Ecosystem Management Plan to integrate the KM105 Pond in the text, tables and figures.

4.9 ECCC#9 – Water Quality Benchmarks in Aquatic Effects Monitoring Plan

References

1. Aquatic Effects Monitoring Plan (Baffinland; March 31, 2024)
    - Section 3.1.1.1: Water Quality Benchmarks
    - Table 3.1: Water Quality Benchmarks for Mine Site Lakes
    - Table 3.2: Water Quality Benchmarks for Mine Site Streams
2. Federal Environmental Quality Guidelines, Selenium (Environment and Climate Change Canada; August 2022)
3. Mary River Project 2023 Core Receiving Environment Monitoring Program Report (Minnow Environmental Inc.; March 2024)

Proponent's Conclusion

Section 3.1.1.1 of the Aquatic Effects Monitoring Plan details how water quality benchmarks were determined for monitored parameters.

ECCC's Conclusion

ECCC notes two parameters for which the water quality benchmarks for lakes and streams could be improved or clarified.

- Aluminum does not mention "(dissolved)", however the CCME benchmark for dissolved aluminum of 0.1g/L is used for Camp Lake. The parameters in the table are for total metals, apart from a few metals where the precision "(dissolved)" was added. It is not clear which values in the "Aluminum" rows of Tables 3.1 and 3.2 are total or dissolved. ECCC notes that there is a FEQG for total aluminum developed in 2022 that incorporates site-specific toxicity modifying factors. This more recent guideline reflects the current understanding on the science related to aluminum compared to CCME (1987) and using this guideline could help clarify measurement of total versus dissolved.
- Selenium is not on the list of parameters with benchmarks. According to the FEQG: "*Among all trace nutrients, the difference between essentiality and toxicity is narrowest for selenium and thus the risk of adverse impact from environmental contamination is extremely high.*" Since selenium is already amongst the metals analyzed in the Core Receiving Environment Monitoring Program, it would be pertinent to compare it to the CCME guideline for the long-term protection of aquatic life of 1 µg/L.

ECCC Recommendation(s):

ECCC recommends that the Proponent update the Aquatic Effects Monitoring Plan to clarify the water quality benchmark for aluminum and include a water quality benchmark for selenium.

4.10 ECCC#10 – Open Burning of Wood Waste

References

1. Waste Management Plan (Baffinland; March 31, 2023)

- Section 4.6: Open Burning

Proponent's Conclusion

Section 4.6 of the Waste Management Plan states that untreated wood waste that is substantially free of glue and other chemicals will be disposed by authorized open burning.

ECCC's Conclusion

It is not clear what is exactly meant by 'substantially free'. Open burning of wood waste is typically restricted to that which is clean and untreated. Wood waste that contains glue and other chemicals should be disposed of by cleaner methods.

ECCC Recommendation(s):

ECCC recommends the Proponent clarify the term "substantially free" when referring to glue and other chemicals in untreated wood waste.

4.11 ECCC#11 – Editorial Comments on Management Plans

References

1. Appendix D of Roads Management Plan: Tote Road Monitoring Program (Baffinland; March 31, 2019)
    - Table D-2: Tote Road Monitoring Program - Analytical Parameters
2. Appendix G of Fresh Water Supply, Sewage, and Wastewater Management Plan: PWSP Effluent Discharge Plan (Wood Environment & Infrastructure Solutions; April 29, 2020)
    - Table in Section 3.0: Sampling and Performance Monitoring
3. Surface Water and Aquatic Ecosystem Management Plan (Baffinland; March 31, 2021)
    - Section 4.1.6: Environment (Sustainable Development) Department
    - Section 7.1.1: Impacts on Surface Water
    - Table 9-3: Milne Port – Water Licence Monitoring Stations
4. Life-of-Mine Waste Rock Management Plan (Baffinland; April 2014)

ECCC's Comment

Several inconsistencies appear as editorial oversights in the management plans. These include:

Plan	Section/Table	Comment
Tote Road Monitoring Program	D-2	The acronym used for Total Dissolved Solids is TSS, but should be TDS.
PWSP Effluent Discharge Plan	3.0	The acronym "NR" is used for Max concentration of any grab sample discharged to the ocean for ammonia and total phosphorous. It is not evident what it stands for and is not defined. The acronym should be defined in a footnote or elsewhere.
Surface Water and Aquatic Ecosystem Management Plan	4.1.6 and 7.1.1	The referencing between sections is mixed. Erosion and sedimentation mitigation measures

		are described in Section 6 of the Plan. However, Section 4.1.6 refers to "*sedimentation and erosion controls outlined in Section 5 of this Plan*". Section 7.1.1 refers to "*Mitigation measures identified in Section 5 of this Plan*". Cross-references should be corrected.
Surface Water and Aquatic Ecosystem Management Plan	Table 9-3	Though the title of the Table states the monitoring stations are for Milne Port, the Table also lists those for the Mine Site. The title should be corrected, or two separate tables (one for each site) should be made.
Life-of-Mine Waste Rock Management Plan	Throughout	MMER is mentioned throughout the Plan, however MMER has been amended and is now MDMER. MMER should be updated to MDMER to reflect current regulations.

ECCC Recommendation(s):

ECCC recommends that the Proponent update the Tote Road Monitoring Program; PWSP Effluent Discharge Plan; Surface Water and Aquatic Ecosystem Management Plan; and Life-of-Mine Waste Rock Management Plan to correct noted inconsistencies at the next opportunity.

5.0 Acknowledgements

ECCC acknowledges and appreciates the effort that the Proponent has taken to provide information and to address concerns brought forward by parties throughout the water licence renewal process. ECCC would like to thank the Nunavut Water Board for this opportunity to provide input to the Mary River Water Licence renewal review and looks forward to continuing its participation in this process.

ECCC's technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations.